



Naval Health Research Center Update

SECOND QUARTER

SPRING 2011

Research Integrity Corner

"Should I
include this
wayward
data point
in my
analysis?"

How would
YOU
Respond?

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NHRC assists in combating global HIV/AIDS

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Readiness Through Research and Development

Over 50 Years of Excellence

1959 ~ 2011

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NHRC assists foreign militaries in combating global HIV/AIDS



The United States Government has a long history and extensive network of international collaboration and partnerships in the fight against human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS).

Africa is the area of the world hit the hardest by HIV/AIDS, and many of their militaries experience readiness problems due to this epidemic. In some Southern Africa countries, as much as 36% of the population is infected with HIV which causes AIDS. The Department of Defense HIV/AIDS Prevention Program (DHAPP) is assigned to assist our partner foreign militaries.

In 2001, the U.S. Navy was designated as Executive Agent for DHAPP with program management headquartered at Naval Health Research Center (NHRC) in San Diego, CA. In large part, this was due to NHRC's 20 years of research to develop military-specific HIV prevention programs.

COMMITMENT TO THE LIFE INITIATIVE

At the urging of the White House, the Department of Defense (DoD) also committed to participate in the Leadership and Investment in Fighting an Epidemic (LIFE) Initiative in 2001. The focus was on prevention programs in sub-Saharan Africa.

By the end of 2001, DHAPP had established collaboration with 13 sub-Saharan African militaries participating in direct military-to-military engagements. Over the next 2 years, DHAPP substantially grew to a 32-country program and expanded to work with militaries outside of Africa.

PEPFAR AUTHORIZATION

DHAPP's major boost came on May 27, 2003, when President George W. Bush authorized the U.S. President's Emergency

Plan for AIDS Relief (PEPFAR).

PEPFAR is the largest ever international health initiative dedicated to a single disease.

DHAPP was a founding implementing agency in the 5-year, \$15 billion initiative under the direction of the U.S. Department of State and the Office of the Global AIDS Coordinator (OGAC). The objective was to carry out prevention, care, treatment, support, and capacity development for combating HIV/AIDS internationally.

DHAPP continued to grow in the number of international militaries it was assisting through the first 5 years of PEPFAR (Phase I). By the end of fiscal year 2008, 75 countries benefited from DHAPP activities.

On July 30, 2008, President Bush signed the Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and

Combating HIV/AIDS— Continued from Page 2

Malaria Reauthorization Act of 2008, reauthorizing PEPFAR (Phase II) through 2013, with up to \$48 billion to combat global HIV/AIDS, tuberculosis and malaria.

NHRC PROVIDES EXPERTISE

One advantage in DHAPP's early and continuing success is the expertise from NHRC staff. All personnel have an integral role in the programs goals and achievements. The roster includes psychologists, epidemiologists, infectious disease physicians, and prevention specialists. Working alongside an additional 120 personnel within embassies and Unified Combatant Commands, DHAPP also provides

technical assistance to militaries using a highly skilled worldwide team.

DHAPP's goal is to maximize program impact by focusing on the drivers of the epidemic specific to the military, and to support the development of interventions and programs that address these issues.

DHAPP continues its efforts to combat HIV/AIDS among respective military services in over 82 countries. The program ensures that militaries around the world are not hindered by morbidity and mortality affecting deployment cycles and troop levels.

DHAPP exists not only to expand HIV prevention, care, and treatment support for active-duty personnel, but also for their dependent



Counseling and testing in the Republic of Mali in Western Africa

family members. As in the United States, family readiness is closely tied to military readiness.

Through the development of local capacity building and focusing on HIV prevention, care, treatment, and sustainability in the military population, civilians in the communities are also greatly impacted.

Many of these militaries have bases in rural areas where the local health care system is unable to adequately provide for the needs of the outlying community. The military steps up and provides counseling, testing, care and treatment needs for these military dependents and civilians.

Although the last decade has shown great strides in HIV prevention efforts, there is still much more to do. DHAPP will carry on fighting this global epidemic with partner foreign militaries by continuing to expand HIV prevention, care, and treatment support for active-duty personnel and family members reaching one person at a time.

DHAPP works with countries' militaries to devise plans based on the following priorities:

- Training of master trainers and peer educators
- Providing "troop-level" HIV/AIDS prevention education and behavior change communication
- Providing infrastructure, equipment, and training to support HIV testing, care, and/or treatment
- Increasing testing of all military personnel
- Developing HIV laboratory diagnostic and monitoring Capabilities
- Increasing clinical capability and other human resources for health care of those infected with HIV
- Developing effective methodology for monitoring and evaluation procedures



Command Updates

Millennium Cohort Study update

Launched in the summer of 2001, the Millennium Cohort Study, used a prospective design to collect baseline and follow-up data to investigate occupational exposures including deployment and potential association with long-term health outcomes.

A phased enrollment design and a population-based sampling of U.S. military personnel from all services ensured representation of active-duty, Reserve, and National Guard members.

The Cohort includes over 151,000 participants with an additional 50,000 enrollees expected in 2010–2011. Study participants complete a questionnaire every 3 years, for up to 21 years, regardless of military status.

The Millennium Cohort Family Study, which will consist of approximately 10,000 military spouses of whom about half will be married to service members who have deployed in support of the current operations, is expected to be launched in mid 2011. This will be the first study to use a large prospective cohort design to evaluate impact of military service and deployment on the health and well-being of service members, their spouses, and co-resident children.

Special populations have been of additional focus including health care workers, female deployers, and individual augmentees.

Using data from the Millennium Cohort Study, researchers can uniquely include active-duty, Reserve, and National Guard members from all services as well as conduct prospective comparisons of populations including nondeployed and deployed while differentiating between those who do and do not report combat exposures.

With about half of the Cohort deploying in support of the combat operations in Iraq and Afghanistan, these studies are well positioned to investigate any long-term health outcomes related to military service and potential impact on family members and families' functioning.

Recently published papers have answered questions ranging from mortality ascertainment, diabetes, cigarette smoking initiation and recidivism, functional health, eating disorders and weight change and newly reported respiratory symptoms and conditions.

A detailed description of the Cohort's overall design and methodologies was published in the *Journal of Occupational and Environmental Medicine* (Smith, 2009). ♦



MILLENNIUM COHORT STUDY

Current Millennium Cohort Study Focus

- Posttraumatic stress disorder (PTSD) and other anxiety disorders
- Depression
- Chronic multi-symptom illnesses
- Head trauma
- Respiratory illness
- Hearing loss
- Migraine headaches
- Unit cohesion
- Weight change
- Complementary and alternative medicine use
- Supplement use
- Physical activity
- Coronary heart disease
- Cardiovascular disease
- Chronic back pain
- Parental stress and infant birth outcomes and
- Cause-specific mortality including suicide

NHRC develops Medical Supply Estimating Process

"Models are for thinking with."

—Sir M. G. Kendall

Imagine, if you will, that a hospital corpsman has rushed to the aid of a fallen comrade and dragged him to the relative safety of a stone wall. A quick examination tells him that the wounded warrior needs immediate intervention. The first responder reaches into his Corpsman Assault Pack and removes a one-handed tourniquet to stop the flow of arterial blood. He reaches in again for a wound pack and compression dressing to further staunch the blood flow and dress the wound. In moments, he has stabilized a life-threatening condition and prepared the casualty for evacuation. That he was able to perform these lifesaving tasks is a tribute to his bravery and training. That he had what was required to save the warfighter's life is a commendation to the efficacy of the logistics processes that provided him with the appropriate supplies and equipment, in the right quantities, in the right place, at the right time.

Estimating supply requirements for treating illnesses and injuries likely to be incurred during military operations is a critical component of the expeditionary medical resource planning process. This process underpins medical readiness



Photo by Marine Staff Sgt. Luis P. Valdespino, Jr.

and improves the success of the medical mission.

To make proper determinations, a science-based process is needed that is applicable across the expeditionary health care continuum of supply and equipment packages—from first-aid kits to theater-level hospitals. It also must be applicable across a range of military operations.

Naval Health Research Center (NHRC), San Diego has developed a systematic, science-based process that meets these requirements, and, since the mid-1990s, has used this approach to estimate medical supply requirements for the US Marine Corps.

Today, NHRC's statistical modeling and simulation method is also used to determine US Air Force, Navy, and naval hospital ship (T-AH) medical supply requirements.

NHRC Enterprise Estimating Supplies Program

NHRC developed a tool, the Enterprise Estimating Supplies Program (EESP), to provide a method for simulating the expeditionary medical network of care to optimize the supply estimation process for the services. EESP is a deterministic modeling program that provides an accurate estimate of the necessary supply inventory for each medical treatment facilities (MTF) and their associated clinical functional areas. This includes the type and

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Medical Supply — Continued from Page 5

quantity of supplies as well as weight, cube, and cost for the entire allowance standard. Using EESP, planners and logisticians are able to project optimal supply estimations, produce a variety of reports to analyze supply use by injury or by the tasks required for treatment, and to compare scenario supplies with those in a given MTF's allowance standard.

EESP Database

EESP relies on an extensive database that describes each element in the expeditionary medical network of care. In the course of military operations, warfighters and support personnel can suffer a wide variety of wounded in action, nonbattle injury, disease, and mental health conditions. In EESP, *International Classification of Diseases*, 9th Revision (ICD-9) diagnostic codes are used to represent each of these. NHRC analysts then develop these detailed clinical task profiles for each ICD-9 at every MTF and clinical functional area throughout the expeditionary medical network of care.

As a result, for each ICD-9, every supply item in the projected inventory is directly associated with its own clinical requirement.

Optimizing Supply Projections

EESP uses this comprehensive database to project supply requirements for specific operational scenarios. Every ICD-9 condition has an associated probability of occurrence, as developed by NHRC over years of studying empirical and historical data. This allows the user to project supply and equipment requirements specifically suited to a defined operational scenario. By using scenario-based patient streams, EESP is able to optimize medical supply projections, resulting in no more and no less than what is required to effectively treat the anticipated casualties.

The program's supply projection process is designed to constrain cost while increasing capability, through enhanced standardization, modernization, and redundancy reduction.

In addition to optimizing supply estimation, EESP enables responsive support

of policy revisions and doctrinal changes.

Why It Matters

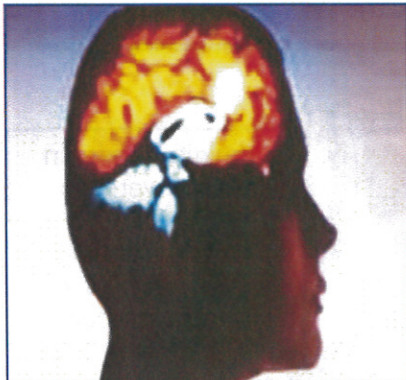
Ultimately, the overarching measure of success is the extent to which military medicine provides injured personnel with the best available medical care.

Today, more military personnel than ever are surviving their injuries. This trend is the result of many factors, including the application of empirically derived clinical practice guidelines, the development of Tactical Combat Casualty Care protocols, and the institution of a Joint Theater Trauma System.

For these elements to improve casualty outcomes, they require that the appropriate supplies and equipment, in the right quantities, in the right place, be available at the right time. It is also essential that these supplies have seamless joint service interoperability. EESP provides the crucial methodology to optimize supply estimation, allowing improvements in theater medical care to increase the survival rate to the highest point in US military history.



NHRC addresses resilience research challenges



It has been said that the brain is the central organ of stress adaptation. Therefore, understanding how the human brain functions in extremely stressful conditions is of fundamental importance to the warfighter. As the central organ in adaptation, the brain modulates a stress-response system that must be highly flexible to maintain stability and optimal functioning.

Literature on the negative long-term effects of combat stress indicates that the autonomic nervous system (ANS) becomes dysregulated when overwhelmed by stress.

This dysregulation is characterized by overproduction of certain stress hormones, where the levels of other bio-markers that play a role in returning the system to baseline are reduced. Such dysregulation is associated with decrements in learning and decision-making, and the ability to discriminate threat cues from non-threat cues.

Just as the brain can reorganize itself in response to chronic or overwhelming stress, it has the potential to remodel prior to stress, in a way that may make high-intensity stressors, like combat, less overwhelming.

RESILIENCE CHALLENGES

Resilience has received significant psychological and medical research attention for over a decade, yet the construct continues to be hampered by factors such as

inconsistent use of definitions, over-emphasis on peripheral resilience factors (i.e., physiology and biology) rather than central factors (i.e., brain function and endophenotypes) and poor translation to clinical and operational applications.

In response to the Commandant's Planning Guidance, the team at Naval Health Research Center (NHRC) has initiated cutting-edge neuroscience research that is addressing the aforementioned challenges to resilience research. The warfighter performance lab is using well-validated cognitive neuroscience approaches to studying human brain structure and function. The lab is not merely clarifying how the brain functions under stress, but also understanding the mechanisms of successful adaptation to stress, and then providing validated mental skills training to promote warfighter resilience.

CURRENT NHRC RESILIENCE RESEARCH EFFORTS

- Developing a measure of individual performance during small-unit combat training exercises at the I Marine Expeditionary Force (I MEF) Infantry Immersive Trainer (IIT).
- Developing a self-report index of unit cohesion.
- Evaluating capacity for unit cohesion to moderate certain innate vulnerabilities to combat stress.
- Using mental skills resilience programs that place demands on brain regions that have been implicated in adapting to stress in training of Marines.
- Evaluating whether mindfulness training is associated with changes in gray-matter density in brain regions involved in cognitively adapting to stress.

NHRC's Automated Heat Stress System saves 100,000 man-hours

By NHRC
Deputy Public Affairs Officer

The Navy's Heat Stress Prevention Program identifies safe Physiological Heat Exposure Limits (PHEL) for personnel exposed to high-heat or humidity environments. Temperatures in engineering, steam catapult, galley, scullery, laundry, and auxiliary equipment can exceed 100°F and fifty percent relative humidity (RH).

Naval Health Research Center (NHRC), San Diego responded to a fleet request to develop an automated system that met the heat stress monitoring requirements of the SMART ship initiative, which uses technology for manpower reduction. This effort resulted in NHRC's Automated Heat Stress System (AHSS) installation on 38 ships and over 60 shore stations, saving over 100,000 man-hours each year.

"Prior to the advances made by the [NHRC] team, determining PHEL stay times for personnel working in hot environments was only done by an individual who moved through all workspaces, reading and recording dry bulb air temperatures," said Mr. Jay H. Heaney, an environmental physiologist in NHRC's Warfighter



Engineering rep calibrates
Automated Heat Stress System

Performance Department.

"If a dry bulb reached a certain trigger temperature, then a Heat Stress Survey (HSS) would be conducted using a portable, hand-held heat stress meter. A complete HSS, which measures the Wet Bulb (WB) Globe Temperature and determines the appropriate PHEL stay times, can take three-to-five hours, depending on the size of the ship. The number of man-hours that were spent performing manual Heat Stress Surveys each year [at that time] is conservatively estimated at 3,300 for a destroyer and 5,800 hours for a carrier."

In 1997, NHRC started developing the AHSS. "The AHSS was the first wet bulb globe temperature heat stress meter to use a relative

humidity sensor in lieu of a wet bulb sensor. The Relative Humidity sensor-derived WB value has become the state-of-the-art for numerous commercial heat stress meters," said Mr. Heaney.

AHSS monitors heat stress

conditions and provides real-time PHEL curve stay time guidance for watch stander rotations. The software stores the data in a spreadsheet file, and prints the required information on a heat stress survey (HSS) form within minutes.

NHRC develops Shore-Based System

NHRC next developed a version of the AHSS to meet shore commands' heat stress monitoring requirements. Historically, Flag conditions were manually monitored with an exterior portable meter that took 15 minutes to obtain stable readings.

"The NHRC shore AHSS was designed to employ a weather enclosure to house the AHSS unit and protect it from wind and rain," said Mr. Heaney. "The AHSS unit

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is wired into a computer, allowing for continuous monitoring of Heat Flag Conditions." Mr. Heaney added that several commands have linked the AHSS data to their website to provide continuous and automated Flag Condition postings throughout the base. Automating the WBGT measurement and posting Flag Conditions provides a real-time method to monitor heat stress conditions 24/7, providing real-time Flag Condition guidance for ashore

command operational environments, training exercises, and physical conditioning conditions. There are over 60 locations monitored throughout the U.S. and abroad.

Why Navy Medicine?

"Heat stress prevention is a medical safety program with oversight by Navy Medicine. The environmental data monitored is used to provide

safe heat exposure guidance. Navy Bureau of Medicine and Surgery (BUMED) has cognizance of this program as the bio-medical application of this data provides guidance for the safety and medical well being of personnel.

"BUMED must provide endorsement to any revision of the heat stress prevention program guidance prior to updating the Office of the Chief of Naval Operations Navy Safety And Occupational Health Instruction (OPNAVINST5100.19E)," said Mr. Heaney.

The AHSS has been installed on the following Navy ships:

DDG-51 Class -Twenty-eight locations are currently being monitored with 3,000 man-hours saved per year, per ship.

LPD Class- Thirty-three locations are currently being monitored with 3,500 man-hours saved per year, per ship.

LHD Class— Forty-six locations are currently being monitored with 4,500 man-hours saved per year, per ship.

The AHSS ashore is operational at the following commands:

Navy Continental United States (CONUS) - All Navy commands throughout the Southwest Region, U.S. Naval Hospital (USNH) Corpus Christi, Branch Health Clinic (BHC) Kingsville, USNH Jacksonville, BHC Kings Bay, and Navy Environmental Preventive Medicine Units 2, 5, and 6.

Navy Outside Contiguous United States (OCONUS) - USNH Okinawa, USNH Yokosuka, USNH Rota, USNH Sigonella, USNH Guantanamo Bay, USNH Kuwait, and BHC Bahrain

USMC CONUS—Marine Corps Recruit Depot (MCRD) San Diego, MCRD Paris Island, all bases at Camp Lejeune, Marine Corps Air Station (MCAS) Miramar, Air Field Camp Pendleton, MCAS Yuma, Air Field Quantico, Marine Corps Logistics Base (MCLB) Albany, and MCLB Blount Island.

OCONUS—All bases Okinawa, MCAS Iwakuni, and Camp Fuji

Research Integrity Corner



"Should I include this wayward data point in my analysis?"

Have you ever asked yourself,

"Can't I just drop this one wayward point out of my analysis?

It will make the curve look more dramatic if I don't use it? "

The answer..."It depends."

Kelly Hochstetler from the Office of Research Integrity at the University of Alaska, Fairbanks provides this guidance.

"The use of statistical methods varies widely among research disciplines. Although the successful cloning of a gene may require no statistical analyses, biology is characterized by variation and therefore most inferences will depend on statistical methods to quantify confidence in accepting or rejecting hypotheses.

Such testing depends on many experimental and

statistical assumptions.

Violation of those assumptions, or a misunderstanding of the methods of analysis, can result in significant, even if unintentional, misrepresentation of the results of a study.

Because it is not possible to report everything that has been done, researchers must make decisions about which studies, data points, and methods of analysis to present. Although some of these decisions are easy, many are not.

For example, should an anomalous data point be excluded from analysis when there is no known reason for the discrepancy? Most researchers would favor retaining the data point, but some fields have criteria for excluding such outliers. It would be irresponsible to exclude such a data point without clearly reporting the

use of the exclusion criteria.

It is a laudable ideal to analyze and report all data; however, in practice some data must be excluded. The selection should be based on objective criteria, preferably ones specified before data collection. Critically evaluate the reasons for inclusion or exclusion of data, the measures taken to avoid bias, and possible ways in which bias may nonetheless influence selection.

Clearly document how the data were obtained, selected, and analyzed—especially if the methods are unusual or potentially controversial."

The bottom line.

If you choose to exclude a data point, make sure you document the reasoning behind it.



Further information on Kelly Hochstetler's guidance on Research Integrity can be found at:

<http://www.uaf.edu/ori/responsible-conduct/data-management/>



NHRC Recent Publications

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Heltemes KJ, Dougherty AL, MacGregor AJ, & Galarneau MR. (2011, February). **Inpatient Hospitalizations of U.S. Military Personnel Medically Evacuated From Iraq and Afghanistan With Combat-Related Traumatic Brain Injury.** *Military Medicine*, 176(2), 132–135.

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NHRC Staff Awards Ceremony

The NHRC Staff Awards Ceremony was held on 22 June 2011.
CAPT Gregory Utz presented the awards/certificates to the following recipients:



Dr. James Hodgdon receives a *Certificate of Recognition* for 35 years of service in the Government of the United States



CAPT Utz presents Mr. Chris Myers with a *Letter of Appreciation* from COL. Charles B Millard of Chemical Biological Medical Systems, recognizing the outstanding support provided by the NHRC Respiratory Diseases Research Department in support of the DoD Joint Biological Agent Identification and Diagnostic System (JBAIDS) Expanded Flu Panel (EFP) clinical trials effort. Their contributions directly led to the success of the JBAIDS EFP

LETTER OF APPRECIATION (MILITARY)

LT Jamie Bartlett

MERITORIOUS CIVILIAN SERVICE AWARD

Mr. Michael Galarneau
Dr. Gerald Larson

LENGTH OF SERVICE (CIVILIAN)

Mr. Jerry Blanco
Mr. Christopher Blood
Mr. Jay Heaney
Dr. James Hodgdon

SPECIAL ACHIEVEMENT AWARD

Ms. Suzanne Hurtado

ON THE SPOT AWARD

Ms. Hoa Ly
Mr. Gerald Pang

LETTER OF APPRECIATION (CIVILIAN)

Department 166, Respiratory Disease Research

CERTIFICATE OF APPRECIATION (CONTRACTOR)

Ms. Kelly Jones, Henry Jackson
Ms. Teresa Powell, Henry Jackson
Ms. Charlene Wong, Henry Jackson
Mr. John David-Collins, SAIC
Mr. Eric Duckworth, SAIC



development of the Expeditionary Medical Encounter Database (EMEDS)

The Meritorious Civilian Service Award is presented to Mr. Michael Galarneau for meritorious service and outstanding contributions to the Navy and Marine Corps operational medicine enterprise for his



Dr. Gerald Larson is presented with the Meritorious Civilian Service Award for his research conducted on mental health issues faced by deploying military personnel, and for the development of tools used to diminish the impact of combat stress on Sailors and Marines, namely, the "Post-deployment User's Guide" and the graphic novel, "The Docs"



Mr. Gerald Pang receives an *ON THE SPOT AWARD* for his contributions in successfully converting the Navy-Marine Corps Combat Trauma Registry database from an outdated program to a current, secure environment

NHRC participates in Warrior Care Day Conference

With November designated as Warrior Care and Family Caregiver Month, the Comprehensive Combat and Complex Casualty Care (C5) Program at Naval Medical Center, San Diego (NMCS D) sponsored a conference highlighting those programs and departments involved in the care of wounded warriors and support to their families.

Naval Health Research Center (NHRC) was invited to participate in the Warrior Care Day open forum held on 19 November. The principal objective was to increase public awareness of NHRC's research and to network with other organizations. NMCS D staff inquired on topics and points of contact for the Computer Assisted Rehabilitation Environment (CAREN) System, "The Docs" and medical modeling. NHRC research areas that were highlighted included "The Docs", Deployment Health Workbook, Echoes video, CAREN System, Millennium Cohort Study, stress inoculation/resilience information and the NHRC overview DVD.

NHRC was well-represented by Dr. Erik Viirre, Dr. Valerie Stander, MAJ Nisara Granado, CDR Deb White, Mr. Harvey Edwards III, Ms. Kari Sausedo and Mr. Shawn Richeson. Event organizers were very pleased with NHRC's participation.



MAJ. Nisara Granado, Kari Sausedo, CDR Deb White, Dr. Erik Virre, Shawn Richeson and Harvey Edwards III

Welcome Back, LCDR Shobe



After 48 hours of travel, LCDR Katharine Shobe returns home to a late night greeting from family and co-workers.

From Left to Right: Matt Shobe, LCDR Katie Shobe, Dr. Jerry Larson, CDR Deb White, Cynthia Simon-Arndt, Robyn McRoy

NHRC team places in Navy Splash & Dash Competition

CDR Dennis Faix, running on an injured foot, and CDR Patrick Blair lead the NHRC two-man team to victory in the Navy Base Point Loma Splash and Dash held on 24 June at Smugglers Cove, Naval Base Point Loma.

The race involved a grueling 500 yard bay swim and 5k run.

According to CDR Blair, "During the difficult portions, we thought of the greater glory of NHRC."



CDR Patrick Blair and CDR Dennis Faix

SPOTLIGHT—

Dr. Karen R. Kelly



Dr. Karen R. Kelly joined Naval Health Research Center (NHRC) in October 2010 after finishing her 3 year post-doctoral fellowship at the renowned Cleveland Clinic (Lerner Research Institute) in Ohio.

Her research centered on obesity and obesity-related chronic diseases that covered primarily Type 2 diabetes, non-alcoholic fatty liver disease and chronic kidney disease with the focus on lifestyle interventions in an obese population with the area of expertise in the endocrinological and metabolic changes that occurred following diet and exercise intervention or following gastric bypass surgery. She was awarded the 2008 Junior Clinical Researcher of the Year Award while at the Cleveland Clinic.

Dr. Kelly is an Applied Physiologist in the Department of Warfighter Performance under the guidance of Dr. Jim Hodgdon and Captain Lanny Boswell. At present, her projects are related to the effects of load carriage on back injury in U.S. Marines; the effects of load carriage on muscle and connective tissue damage; bone turnover in U.S. Marines; and assisting on a project that is evaluating commercially available chemical and biological (CB) protective garments for use by Combat Vehicle Crewmen (CVC) in a hot environment in a variety of clothing and gear configurations. She also intends to incorporate additional biochemical analysis and mechanisms in her other research projects.

Dr. Kelly is a southern California native, having been born and raised in Pasadena. She completed her undergraduate degree in Biology from University of California, San Diego; her Master of Science degree in Exercise Physiology from San Diego State University and a doctorate in Kinesiology/Metabolic Physiology with an emphasis in lipid regulation from the University of Southern California in Los Angeles.

Dr. Kelly currently lives in La Jolla with her son, Jack and daughter Finley. In her "off time", she is an avid runner, marathoner, ultra-marathoner and former adventure racer. She also enjoys yoga, Pilates, mountain biking, water skiing, snowboarding and is a Tae Kwon Do student. Dr. Kelly is thrilled to be back in San Diego and a part of the Warfighter Performance Department at NHRC.



Welcome Aboard

Medical Modeling, Simulation & Mission Support Dept

Koree Goff, Trauma Nurse Registrar
 Patricia Kline, SQL Programmer
 Natella Feinstein, SQL Programmer
 Dr. Mary Clouser, Research Epidemiologist
 Bethi Luu, Project Enroller-Data Manager
 Matthew Quinn, Principal Analyst, Database
 Technician
 Roderick Maclan, Principal Systems Analyst

Deployment Health Research Dept

Dr. Nancy Crum-Cianflone, Department Head

Finance

Jeremiah Couh, Acquisition Associate
 Jose Farfan, Administrative Assistant

Warfighter Performance Dept

Stefania Marzano, Research Assistant
 Chun Yeung, Administrative Research
 Assistant
 Dr. Rebecca Jaworski, Physiologist
 Dr. Jeff Gertsch, Research Scientist
 Dr. Karen Kelly, Applied Physiologist
 Brenda Niederberger, Exercise Physiologist
 Norma Zaske, Technical Support Specialist
 Harvey Edwards III, Project Manager
 Delwin Johnson, Computer Engineer
 Dr. Kameran Neises, Research Scientist
 Jenny Marks, Research Project Coordinator
 Douglas Jones, Research Physiologist
 Michael Buono, Research Physiologist

Respiratory Diseases Research Dept

Shan Putnam, Program Head Enterics
 Megan Sadakane, Medical Research Assistant

HIV/AIDS Programs Dept

Stephanie Hess, Monitoring & Evaluation
 Specialist
 John Degnan, Desk Officer
 Bruce Porter, Desk Officer

Administration

Claro Garcia, Administrative Officer
 Gregory McCurtis, Support Services Supervisor
 Victor Hernandez, Administrative Assistant
 Emma Casares, Administrative Assistant

Changes to Note

CAPT Lanny Boswell and LT Jacob Norris are deployed to Afghanistan
 Michelle Stoia name change to Michelle LeWark
 Tabitha Zimmerman name change to Tabitha Woolpert
 Melinda Balansay name change to Melinda Balansay-Ames
 Hayden Souriyo name change to Hayden Thammavong
 Katherine Evans name change to Katherine Evans Stanfill
 Amanda Cowhick name change to Amanda Cowhick Harmon

Command Highlights

NHRC receives National Institutes of Health Research Project grant

Naval Health Research Center, VA Puget Sound Health Care System, and the Seattle Institute for Biomedical and Clinical Research was awarded a National Institutes of Health (NIH) Research Project (RO1) grant to study alcohol and tobacco using the Millennium Cohort Study. APR 2011

NHRC appointed to lead the administration of the BioThrx Pregnancy Registry

Health Affairs recently endorsed efforts to evaluate the safety of the Anthrax Vaccine between the Department of Defense and the manufacturer, and appointed NHRC to lead the administration of the BioThrax Pregnancy Registry. The department will be developing a protocol and survey tools for creation of a registry, and working with the manufacturer for funding of this project. APR 2011

Surgeon General references NHRC projects in House Armed Services Committee testimony

The Surgeon General referenced two projects from NHRC Department of Behavioral Science and Epidemiology in his House Armed Services Committee testimony. The Behavioral Health Needs Assessment Survey (BHNAS) was discussed in the context of the Mobile Mental Health Care Team, and the graphic novel "The Docs" was provided as support of the Navy's effort to promote resilience in combat deployers and hospital corpsmen. MAR 2011

NHRC screens Fort Jackson trainees for respiratory illness

Mr. Anthony Hawksworth coordinated efforts with US Army Public Health Command (USAPHC) to screen a company of trainees at Fort Jackson for respiratory illness and collect blood specimens. Two-hundred and eight trainees from F Company, 3-34 Infantry Regiment, completed a brief survey on their history of respiratory symptoms. Blood specimens were obtained from 204 trainees, processed, and shipped to NHRC for testing. NHRC expects to have completed results in 3-4 months. These will be reported to Armed Forces Health Surveillance Center's (AFHSC), DoD(HA), Service public health centers and Surgeon General's offices, Military Vaccine Agency (MILVAX), Defense Logistics Agency (DLA), Proponency Office for Preventive Medicine (POPM), and The U.S. Army Training and Doctrine Command (TRADOC) to inform current and future influenza immunization policy and program decisions. MAR 2011

NHRC assists in survey design for assessing Japan-deployed sailors' perceptions

Dr. Gerald Larson was contacted by the Navy Warfare Development Command (NWDC) for assistance in designing a survey assessing Japan-deployed sailors' perceptions of health risks stemming from radiation exposure. The goal is to determine the degree of apprehension among sailors following the Japanese reactor failures, and document any health-related information they might be receiving. MAR 2011

Respiratory Illness surveillance update

NHRC conducts surveillance for respiratory illnesses among shipboard and military recruit populations at multiple sites across the United States. NHRC's surveillance activities documented the first cases of pandemic Influenza A (H1N1) (pH1N1) virus infections in April 2009. NHRC's surveillance in recruits through the initial weeks of the current influenza season suggests poor efficacy for the pH1N1 component of the seasonal live, attenuated influenza vaccine (LAIV). Influenza among military recruits tends to occur in the first 2 weeks of training before protection is conferred from universal vaccination at arrival. During January 2011 at three Recruit Training Centers in a region where transmission rates of pH1N1 were elevated, the median onset of influenza B and A/H3 cases was training weeks 1 and 3, but week 7 ($p < 0.01$) for pH1N1 cases.

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Among LAIV-vaccinated recruits, pH1N1 was detected in 81% of laboratory-confirmed influenza cases. This observation suggests that the trivalent LAIV is protective in the recruit population for the A/H3 and B components, but has decreased effectiveness against circulating pH1N1. FEB 2011

NHRC participates in the development of the internal medicine functional area (FA) for the EMEDS HRT model

Mr. Ralph Nix, Mr. Curt Hopkins, and Ms Tracy Negus attended the US Air Force Development Evaluation (Demonstration) and an Expeditionary Medical Support Health Response Team (EMEDS HRT) medical deployment system exercise at Travis Air Force Base. They participated in the development of the internal medicine functional area (FA) for the EMEDS HRT (pediatrics/gynecology) model with subject matter experts. They reviewed equipment and patient conditions/ICD-9 categories during the FA development. Additionally, NHRC had meetings with Air Combat Command (ACC) and Air Force Medical Operations Agency (AFMOA) customers. FEB 2011

NHRC attends Tri-Service Neuromuscular Injury Rehabilitation Intramural Research Program Planning Meeting

LT Jamie Bartlett attended the Tri-Service Neuromuscular Injury Rehabilitation Intramural Research Program Planning Meeting at Brooke Army Medical Center. This meeting was led by COL Rachel Evans and attended primarily by Army representatives. CAPT Zemke from NH Portsmouth was a representative for the Navy. The meeting was an open discussion about the direction of funding to address previously identified research gaps. FEB 2011

Service-specific patient condition occurrence frequency tables provided to Office of the Secretary of Defense

Responding to a request from the Office of the Secretary of Defense (OSD), Mr. James Zouris prepared service-specific patient condition occurrence frequency (PCOF) tables. The PCOF tables were obtained from the hybrid database that was developed by the Medical Modeling, Simulation & Mission Support statisticians. The purpose of this database is to provide a centralized location for estimating medical planning factors during military operations. From the database, PCOF tables were queried by service (Air Force, Army, Marines, and Navy) and operation (Operation Enduring Freedom and Operation Iraqi Freedom), for a total of eight tables. Also, for each PCOF table, four casualty estimates were provided: wounded-in-action, disease, nonbattle injury, and combat stress injury. This information will help medical planners determine the necessary medical requirements for current and future military deployments. JAN 2011

Infectious disease experts review ongoing pathogen discovery efforts

Since 2001, the emergence of both naturally-occurring and genetically-modified infectious pathogens has heightened detection and response concerns among public health officials. The Armed Forces Health Surveillance Center (AFHSC) convened a meeting of infectious disease experts to review ongoing pathogen discovery efforts, and establish partnerships between Department of Defense (DoD)-sponsored program managers and scientists. During the meeting, CDR Patrick Blair presented a review of AFHSC-sponsored pathogen discovery work titled "Pathogen Discovery within the GEIS-network: Examples from Three Continents". JAN 2011

World Class Modeling task awarded to build a costing model for expeditionary medical forces

The Medical Modeling and Simulation department was awarded a World Class Modeling tasking from Office of the Chief of Naval Operations' (OPNAV) Assessment Division (N81) to build a costing

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model for expeditionary medical forces. This task includes verification and validation of both the costing model and the Tactical Medical Logistics Planning Tool (TML+). JAN 2011

NHRC attends high level briefs concerning process improvement activity updates

CAPT Gregory Utz and Mr. Mike Galarneau, representing RDML Valentin, attended high-level briefs to Dr. J. Michael Gilmore, Director of Office of the Secretary of Defense, Operational Test & Evaluation, and the Joint Trauma Analysis and Prevention of Injury in Combat (JTAPIC) Senior Advisory Committee concerning process improvement activity updates and lingering issues. Attendees included the Army Surgeon General and Major General James Gilman. An additional classified brief was given by the Medical Examiner's Office on recent tactical and medical intelligence concerning combat injuries and events in theater. NHRC was recognized as a vital partner during the meeting. CAPT Utz and Mr. Galarneau also met with the acting JTAPIC Program Manager and several JTAPIC partners and customers to work on a way forward. DEC 2010

RDML Forrest Faison, Commander, NAVMEDWEST/NMCSD, visits NHRC to discuss collaborations

RDML Forrest Faison, Commander, Navy Medicine West/Naval Medical Center San Diego, (NAVMEDWEST/NMCSD) and CAPT Richard Green, Director of Medical Education at NMCSD, visited NHRC for a command briefing, department briefings, and a tour of the Respiratory Diseases Department's laboratory spaces. RDML Faison is interested in developing collaborations between NMCSD and NHRC, and was pleased to hear that a number of collaborations between NMCSD residents and staff and NHRC researchers are currently underway. DEC 2010

RADM Michael Mittelman, Pacific Command Surgeon, briefed on DHAPP activities

RADM Michael Mittelman, Pacific Command (PACOM) Surgeon, Col Kelley Barham, Deputy PACOM Surgeon, and CPT Hennessy, PACOM Surgeon staff met with CAPT Gregory Utz, CAPT Doug Forcino, Dr. Rick Shaffer, CAPT Braden Hale, and Dr. Steve Nice at NHRC to receive a brief on activities in the PACOM- Area of Responsibility AOR for the Department of Defense HIV/AIDS Prevention Program (DHAPP) and the US President's Emergency Plan for AIDS Relief (PEPFAR). Discussions between the PACOM Surgeon and NHRC were valuable in establishing a strategy to enhance activities in the PACOM-AOR, and were well received by all attendees. DEC 2010

"The Docs" distribution continues

Distribution of "The Docs," a graphic novel, continues at a brisk pace. The following requests have been received from: a) the Role 3 hospital in Kandahar, Afghanistan asked for an additional 100 copies following an initial shipment of 100 books to be used as part of their Caregiver Operational Stress Control program; b) the Field Medical Battalion-East requested over 300 copies for in-training and on-staff corpsmen; c) the Commanding Officer of the 2D Medical Battalion, Camp LeJeune requested 36 copies for his Battalion and also asked that 12 copies be sent to the U.S. Army Medical Center and School at Fort Sam Houston; d) the U.S. Marine Corps Combat and Operational Stress Control (COSC) Behavioral Health Information Network, which allows on-line ordering of COSC materials by active duty personnel, reports that almost every order includes a request for "The Docs," and about half of their orders are solely for the graphic novel. "The Docs" was developed by Dr. Jerry Larson, Dr. Heidi Kraft, and contractor staff at Research Triangle International. NOV 2010





Commanding Officer's Corner

Investing in our Future: STEM

CAPT Gregory Utz
Commanding Officer

Since its inception, the Navy and Marine Corps team has been a leader in developing science and technology (S&T) solutions to defend U.S. interests. The U.S. is the world's technology leader; however, in recent years the supply of graduates in science, technology, engineering and mathematics (STEM) has not kept up with increasing demand. The fact that China graduates nearly three times as many four-year degrees in engineering and computer sciences as in the U.S. could threaten America's future economic security and ability to provide advanced

technologies that give warfighters the edge.

Investing in S&T helps naval forces maintain an advantage as the high-tech service of the future and sustain the vitality of our nation's STEM workforce, upon which the Department of the Navy (DoN) depends. The roadmap to the STEM program's success has five priorities: inspire, engage, educate, employ, and collaborate. The goal is to help build the nation's talent base and meet the DON's future workforce needs.

The secretary of the Navy has set a goal to double

I encourage all Naval Health Research Center staff to be involved with STEM efforts, whether here at the base, or at local schools and clubs.

naval investments over the next 5 years. Target areas include, hands-on learning opportunities, close mentoring relationships with naval STEM professionals, outreach to K-12, under-represented minority and economically disadvantaged students, and advanced research opportunities at top universities focused on naval-relevant topics.

Beginning in 2009, the Office of Naval Research invested more than \$55M in STEM initiatives Navy-wide and launched the website www.Stem2Stern.org.

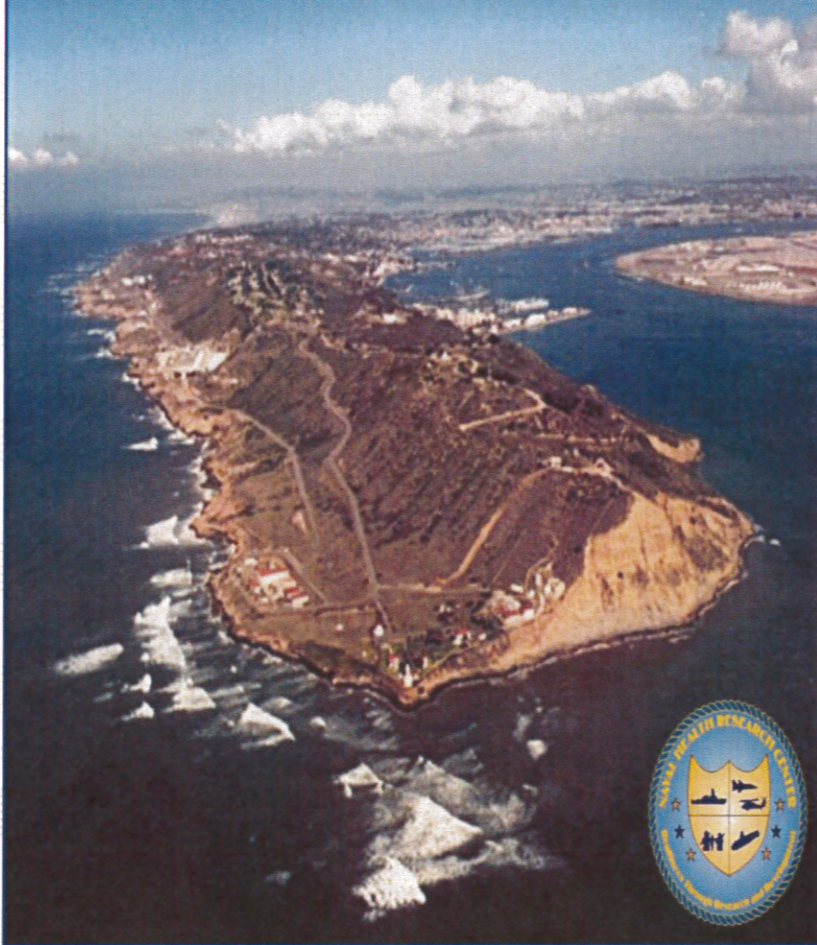
For more information regarding the STEM program, visit www.STEM2Stern.org or contact LCDR Marla McClellan, Command Diversity Officer at (619) 767-4707.

"It was one of the most rewarding [days] I've had in this job. We literally had a couple hundred kids there. And, to see the excitement, to see the wonder at these hands-on things they were getting to do. I have to tell you, they didn't care one thing about hearing the speech. They didn't care if it was Admiral Carr or me. They didn't care if it was the congressman or the representative from the mayor's office. Because, they wanted to be with those experiments. They wanted to be doing the science experiments that were laid out for them. They wanted to be learning about this stuff. And, that's exactly the way it ought to be."

- Remarks by the Honorable Ray Mabus, Secretary of the Navy, Naval STEM Forum, 15 June 2011



NAVAL HEALTH RESEARCH CENTER SAN DIEGO



Navy Medicine Introduces New Publication

The Navy Medicine Institute for the Medical Humanities and Research Leadership in partnership with the Smithsonian Institution Scholarly Press, proudly announces the publication of their inaugural edition of the new Journal of Healthcare, Science and the Humanities - A Navy Medicine Publication (Volume 1, Number 1). This new journal can be downloaded from BUMED's "issue" website:

<http://issuu.com/navymedicine/docs>

A hard copy is also available in the NHRC library.

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Mission: To conduct health and medical research, development, testing, evaluation, and surveillance
to enhance deployment readiness of DOD personnel worldwide.

Vision: World-class health and medical research solutions anytime, anywhere.